

What is claimed is:

1. A method of forming a liquid crystal alignment film comprising the steps of:

dissolving a polymer material in a mixed  
5 solvent comprising a polar main solvent and a leveling agent and coating the solution on a substrate;  
pre-baking the substrate to volatilize at least a part of the mixed solvent; and

baking the substrate at a higher temperature  
10 than the pre-baking to polymerize the polymer material and form a liquid crystal alignment film,

wherein a ratio of the leveling agent in the mixed solvent is a predetermined ratio by which the mixed solvent uniformly volatilizes on the substrate during the  
15 pre-baking step.

2. A method of forming a liquid crystal alignment film as set forth in claim 1, wherein the leveling agent comprises butyl  $\beta$ -hydroxyethyl ether.

3. A method of forming a liquid crystal alignment  
20 film as set forth in claim 2, wherein an upper limit of the predetermined ratio is about 15 wt%.

4. A method of forming a liquid crystal alignment film as set forth in claim 3, wherein a lower limit of the predetermined ratio is about 5 wt%.

5. A method of forming a liquid crystal alignment

film as set forth in claim 4, wherein the main solvent is  $\gamma$ -butyrolactone.

6. A method of forming a liquid crystal alignment film as set forth in claim 4, wherein the main solvent is  
5 N-methyl- $\alpha$ -pyrrolidone (NMP).

7. A method of forming a liquid crystal alignment film as set forth in claim 4, wherein the step of  
dissolving a polymer material in a mixed solvent and  
coating the solution on a substrate comprises a printing  
10 step.

8. A method of producing a liquid crystal display device comprising the steps of:

forming an electrode and a semiconductor  
element on a substrate;  
15 dissolving a polymer material in a mixed  
solvent comprising a polar main solvent and a leveling  
agent and coating the solution on a substrate;  
pre-baking the substrate to volatilize at least  
part of the mixed solvent;  
20 baking the substrate at a higher temperature  
than the pre-baking to polymerize the polymer material  
and form a liquid crystal alignment film;  
rubbing the liquid crystal alignment film; and  
stacking a pair of substrates and filling a  
25 liquid crystal material between the substrates,

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wherein a ratio of the leveling agent in the mixed solvent is a predetermined ratio by which the mixed solvent uniformly volatilizes on the substrate during the pre-baking step.

- 5           9. A method of forming a liquid crystal alignment film as set forth in claim 8, wherein the leveling agent comprises butyl  $\beta$ -hydroxyethyl ether.

- 10           10. A method of forming a liquid crystal alignment film as set forth in claim 9, wherein an upper limit of the predetermined ratio is about 15 wt%.

11. A method of forming a liquid crystal alignment film as set forth in claim 10, wherein a lower limit of the predetermined ratio is about 5 wt%.

- 15           12. A method of forming a liquid crystal alignment film as set forth in claim 11, wherein the main solvent is  $\gamma$ -butyrolactone.

13. A method of forming a liquid crystal alignment film as set forth in claim 11, wherein the main solvent is N-methyl- $\alpha$ -pyrrolidone (NMP).

- 20           14. A method of forming a liquid crystal alignment film as set forth in claim 11, wherein the step of dissolving a polymer material in a mixed solvent and coating the solution on a substrate comprises a printing step.